

# **Complex Organisations: A Model for Survival**

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## **Abstract**

A series of projects have been undertaken into the inter-relationship between career trajectories and decision-making in large organisations<sup>1</sup>. The projects have compared and contrasted the results from similar sized industrial and defence organisations. In following a number of individuals through to Director level, or the defence equivalent, it was noted that there was a complete change in the level of decision-making capability. The level dropped dramatically in many of the cases examined.

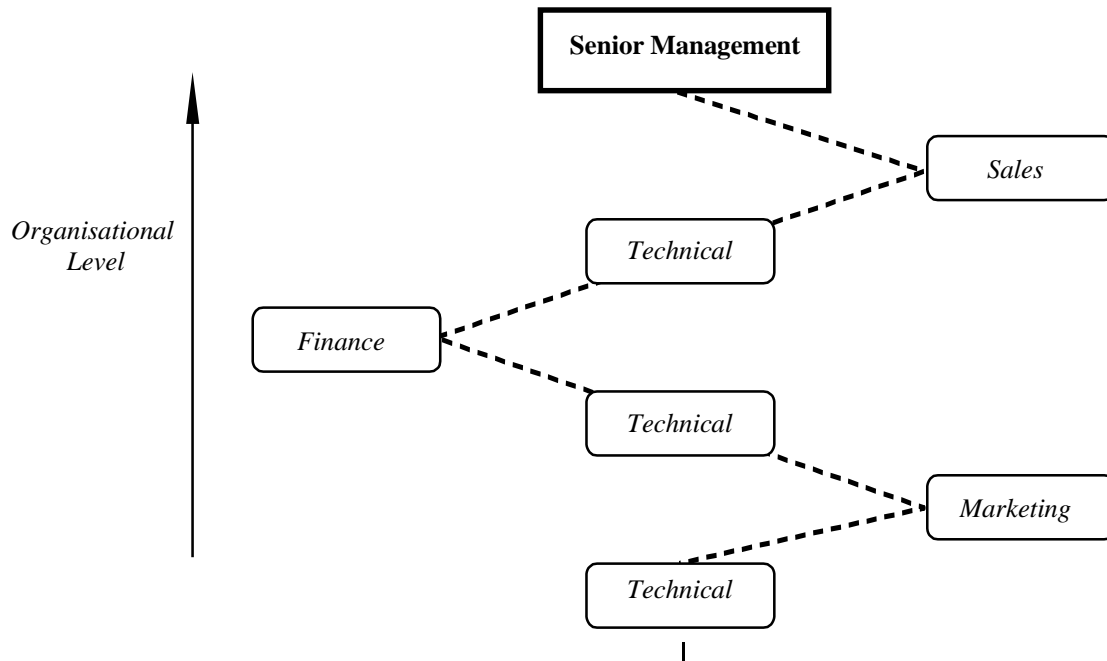
As a consequence the focus shifted from individuals to organisations since the scope of the problem was not a personal problem. A number of studies have been made of large high technology companies and the effect of a significant technology change in their survival<sup>2</sup>. In this study some five out of 27 companies survived one change, with further depletion of their ranks with a second change. The conclusion reached from this and other studies was that the survival rate over the periods required for defence systems is of the order of five percent. This paper examines the reasons behind this survival rate, both for the survivors and the non-survivors, and develops a model based on the need to survive, changes in technology, and long term obligations.

## **1. The Gatekeeper Model**

The examination of career trajectories for staff destined for Director rank showed that the trajectories had two major components as shown in Figure 1.

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- 1 O'Brien, F., and O'Neill, J., 'Decision Making and Currency for C2 Systems', 4th International Command and Control Research and Technology Symposium, USA, June 1999.
  - 2 Beckstrom, L. and Hydrén, A., 'Managing Changes: a study of how companies handle technological transitions,' Masters thesis, Chalmers University, Department of Systems Management, February 2000

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*Figure 1: Career Trajectory*

This illustrates that a gatekeeper is employed with qualifications related to the organisations core competence and returns to this core, interspersed with periods in essential areas of the organisation's structure. A core for the Airforce would be flying, with stints in maintenance, mission planning and headquarters liaison, for example.

In business, identification of a set of competencies is not always direct, but is an essential part of an organisations continued success<sup>3</sup>. The successful identification of core competencies has been highlighted over the past few years through the rapid increase in outsourcing. In cases such as defence, outsourcing of critical system maintenance has resulted in a recognition that such maintenance is, in fact, a core competence.

The career trajectory results in senior level staff that are expert in the core competencies, and have a very good working knowledge of all facets of the organisation. The actual question of decision making at Board level was why such capable individuals seemed to change. One explanation was that the time taken to move from graduate to Director, some 25 years, itself implied that there are competencies encountered en route were no longer valid.

An example of this was Sandvik Steel in Sweden in the 1970's when the tungsten carbide rock drill division started earning more revenue than the high quality steel division. At that stage the only way to get on the Board was to be 'man of steel,' and this caused considerable tensions.

Nevertheless the staff tracked, both in large organisations and defence are very able and competent individuals, and dismissing their decisions as some form of incompetence seemed to be unreasonable. This prompted widening the view to see if the decision making, as observed, was part of a corporate epidemic.

## 2. Organisational Survival

The concept of a corporate problem rather than individual problems was followed up<sup>4</sup> in a Masters thesis. This thesis took a number of studies, such as those undertaken by Foster<sup>5</sup> and Cooper and Smith<sup>6</sup>, which examined how large high technology companies reacted to changes in core technologies.

Figure two from Foster shows the scope and rate of change that the various organisations had to face.

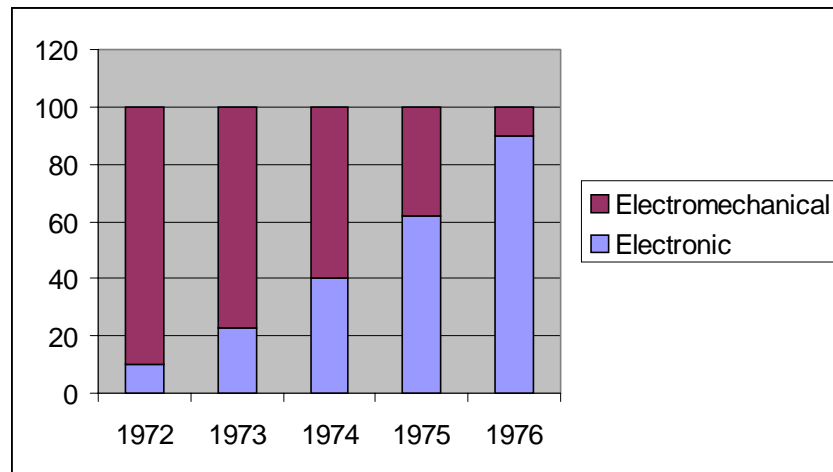


Figure 2: Deliveries of new cash registers in the US (Source: Foster, 1986)

The thesis reached the conclusion that the inability to survive such technological change was, in fact, the norm, with some five percent of companies surviving over extended periods. This conclusion supported the original hypothesis, which was that the change in decision making of gatekeepers, with promotion to Board level, was primarily a result of the corporation itself.

The question was raised, at this stage, as to whether or not long-term survival was a desirable attribute for a large high technology company. This is a complex question, especially when companies such as IBM, Siemens, Philips and Ericsson have assumed an iconic status in their countries of origin.

A life cycle for any organisation, if an accepted concept, should therefore include organisations long term planning for a graceful exit, not a lingering and expensive farewell. On the other hand, such an exit may be the norm for high technology businesses but it is clearly not an acceptable outcome for defence, unless outsourcing to mercenary armies returns as a viable equation.

<sup>3</sup> Finnigan, J.P., *The Managers Guide to Benchmarking: essential skills for the new competitive-cooperative economy*, Jossey-Bass Publishers, San Francisco, USA.

<sup>4</sup> Beckstrom, L. and Hydrén, A., *Managing Changes: a study of how companies handle technological transitions*, Masters thesis, Chalmers University, Department of Systems Management, February 2000

<sup>5</sup> Foster, R.N., *Innovation: the attacker's advantage*, Summit Books, New York, USA, 1986.

<sup>6</sup> Cooper, A.C. and Smith, C.G., *How established firms respond to threatening technologies*, The Academy of Management Executive, Ada, May 1992, pp 55-68

There are a number of ways of regarding survival, since a significant technology change implies an organisational re-invention. Companies such as Wang and Unisys have moved from computer system designers and manufacturers to service companies, but not without severe trauma. Companies such as HP have reinvented on a more continuous basis, keeping the increment of organisational change to be a relatively small part of the structure.

However, the general conclusion is that a recognisable shape of survival is not the norm for large high technology companies.

### **3. Legacies**

One of the factors that emerged from the studies of the effects of technology change was the influence of long-term support to the organisation's client base. This support included day-to-day assistance through to guaranteed upgrade paths to new versions of a technology.

Many companies provided such long-term support as a core competency; notably IBM with the OS/360 derived software products. This support can extend over generations, literally in the case of the B52 program, and, particularly for software, the long term impacts have proven to be much higher than originally envisaged.

It is this long-term commitment that has been classed as the legacy problem. Virtually all of the companies surveyed had significant legacy systems, with their associated organisational structures, including reward and promotion standards.

On the other hand companies that did not have a legacy problem, either through the class of product or through corporate policy, were becoming outstandingly successful. An example of a class of product is the mobile phone that has a very short lifetime, hence assisting companies such as Nokia to both grow and survive. An example of corporate policy is Microsoft, who only support a limited window of software versions.

In both these cases, product class and policy, the result is that the organisation can be totally focussed on innovation; just one culture. The extreme difficulty perceived for the Legacy owning companies is that they need to cope with the long-term legacies, and innovate; two quite different cultures.

Cooper & Smith discussed a number of organisational responses to technology change, such as the introduction of digital watches at Timex Inc., a leader in mechanical watches. The tension created under the one company structure between the innovation needed across the organisation, and the legacy organisation, essentially defeated the move to the new digital world.

The separation of the legacy culture and the innovation culture has been shown to be a key element for survival, and this is perhaps a pointer for defence. Defence is an extreme example in some ways, unavoidable and very long-term legacy requirements, coupled with a need to look ahead and innovate on long term horizons.

The positive side of the studies into such legacy companies is that there are a number of survivors. It also appears that this survival is not just a matter of chance, which is encouraging; rather it is a matter of managing change on a continuous basis.

#### 4. Management of Change

There are generally two forms of technology change that need to be considered. The first is the form of incremental change within a specific usage. An example is the move from transistors to integrated circuits; an incremental but significant change for electronic-based organisations.

The second form is a discontinuity, such as that shown in Figure two, replacing a core competency in high precision mechanical design by electronics. Companies that have survived such discontinuities, as identified by Trushman and O'Reilly<sup>7</sup>, are Hewlett Packard, Johnson and Johnson, and Asea Brown Boveri. These companies have moved continuously across product boundaries through a process of, essentially, creating new organisational units, and disbanding old ones.

One example is that of Ericsson that created Honeywell Ericsson in Anaheim for the new technology PABX equipment, leaving the old ERGA group in Stockholm to be redeployed. These companies have managed to develop an overarching culture, sometimes termed 'tight-loose'<sup>8</sup>, that recognises both innovation and legacy responsibilities.

This successful cultural approach gives rise to a set of organisational metrics that can be used to assess survival for change in high technology companies. These metrics reflect the potential for management of change, for both forms of technology change.

#### 5. Defence and Change

From the commercial arena it is then a question of whether or not there are equivalent metrics in the Federal Government organisations such as NASA, and in defence. It should be noted that both forms of organisation have strong legacy obligations.

In the case of defence in Australia, there is now a wide spectrum of activities against which the organisation can be measured, but the commercial imperative of survival is, hopefully, not to be put to the test. On the other hand the policing duties, such as dealing with boat people, and peacekeeping in East Timor, are part of the on-going and visible activities.

Without a true commercial basis, the best metric for these two latter activities is related to fitness for purpose, starting from the original government policies that initiated these activities. The proposed model could be utilised in such situations, through the use of the original Government goals, the expression and evolution to the end state, and the organisational forms for supporting the goals and set of end states. A specific example is the use or otherwise of the major Headquarters organisation in the context of the East Timor operations.

On the defence aspect the ability to handle change is the metric that is one that most closely related to the commercial arena, even though the change is policy driven in essence rather than a natural part of a commercial environment. Change in defence clearly involves looking ahead at least fifteen years, generally longer than is necessary in the commercial arena. Planning for 2015

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<sup>7</sup> Trushman, M.L. and O'Reilly, C.A., 'Ambidextrous Organisation: Managing Evolutionary and Revolutionary Change,' California Management Review, Berkeley, USA, Summer 1996, pp 8-30

<sup>8</sup> Trushman, M.L. and O'Reilly, C.A., 'Ambidextrous Organisation: Managing Evolutionary and Revolutionary Change,' California Management Review, Berkeley, USA, Summer 1996, pp 8-30

is already in progress, and predicted technology change looms large in this activity. In addition the generation of technologies beyond this time frame are already being assessed. Given these time frames, and the task of assessing threats or roles, the policy dimension becomes extremely important.

## **6. Conclusions**

The paper has continued the theme of examining the commercial arena to see how lessons learnt can be applied to defence, and vice versa. The concentration has been on the model for large high technology organisations based on their survival, the changes in technology experienced, and long term, or legacy, obligations. It is significant that only a minority of the high technology companies survive in a recognisable form, but this minority illustrates a set of metrics for the model that is consistent.

The primary metric is that of the ability to manage change pro-actively on a continuous basis. This in turn mandates a culture and organisational approach that simultaneously supports the two distinct cultures, legacy and innovative. The approach itself includes a life cycle for units within the organisation, creation at the innovative end, and disbanding as the legacy marketplace becomes non-economic.

Defence is seen as an extreme example, forming very long legacy timeframes, together with very forward requirements for technology. It would therefore appear that the cultural and organisational pro-active approach of the survivors is worth investigating for its applicability to the defence environment.